

Benchmark Case Study - Hawaii

(present management system)

Conservation Effects Worksheet

Cropland - Pineapple
(land use and crop)

Resource Setting: Oahu, Hawaii

Pineapple lands are located in the central Oahu plateau, between Koolau and the Waianae mountain ranges. The annual rainfall is between 35 and 50 inches. The elevation ranges from 500 to 1200 feet. The Kunia, Kolekole, and Wahiawa series are the major soils found in this resource area. These are made up of silty clays and silty clay loams. The slopes range from 0 to 8%.

Present Management System:

Pineapple is grown for both the fresh fruit and canning. The crop is grown for two ratoons. The first crop cycle is between 18 to 24 months to harvest. Each ratoon after this is for 12 months. Each planting block is 100 feet wide. There is usually 110 feet from center to center of the in field road. Field preparation is done by machines. All planting is done by hand. Planting is done year round, except for the wet months when field conditions prohibit work. Some weeding is done by hand, but modern weed control is also practiced. Some drip irrigation is in use. Flowering and ripening are controlled by applications of various agents. Harvesting is done by hand.

Resource Problems Before Treatment:

Erosion occurs from overland flow of water. This creates sheet, rill, and gully erosion. Wind erosion occurs to a minimal extent. The location of aquifers and surface flows leads to potential contamination of ground water and receiving waters. The Kaiaka Waialua HUA and the Pearl Harbor HUA both contains pineapple in their watersheds. Availability of water limits acreage being irrigated.

ACTIONS (Kinds, Amounts, Timing)	EFFECTS (Effects of Continuing Bench System)
Field Preparation	
<p>Incorporation of residue</p> <p>Disc harrow & deep plow. Shatter hard pan</p> <p>Machinery:</p> <ul style="list-style-type: none"> - D-8 tractor - Disc harrow - 30 n. moldboard plow - 4WD tractor 420 hp. 	<p>Increase organic matter content, exchange capacity, and moisture holding capacity; Increases amounts of micro- and macro organisms.</p> <p>Burning may cause air pollution.</p> <p>Improve soil tilth and percolation.</p> <p>Increases erosion and potential for erosion due to open fields</p> <p>Excess soil detachment may deliver AG-chemicals and cause nutrient enhancement to receiving waters.</p>
Planting	
<p>200 hp tractor applies plastic mulch, preplant banding of NPK, preplant herbicide.</p> <p>Preplant application of fungicide and nematicides.</p> <p>Planting Operation</p>	<p>40% mulch cover reduces erosion by 2 tons/acre.</p> <p>Banding fertilizer reduces the amount leached, as opposed to broadcast. Excess nutrient enrichment may occur due to lack of uptake from plants.</p> <p>Preemergence herbicide may pollute surface and ground water. Soil loss 9.6 tons per acre.</p> <p>Fungicides and nematicides used for seed treatment. Alliete, benelate, Telone, and Nematicur could add to NPS pollution.</p>

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